

REMARKS

Claims 1-45 are pending in this application. Applicant reserves the right to pursue the original claims and other claims in this and other applications.

Claims 1, 2, 4, 6, 9, 10-12, 14, 16, 19-23, 25 and 27-34 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 7,286,174 (“Weale”) in view of U.S. Patent No. 6,710,804 (“Guidash ‘804”). This rejection is respectfully traversed.

Claim 1 is drawn to a pixel cell comprising “a first storage node for storing charge generated at a photosensitive element during an integration period prior to storing said charge at a floating diffusion region of said pixel cell; and a second storage node for storing a portion of said charge generated by said photosensitive element during the integration period that is not stored by said first storage node and prior to storing said portion of said charge at said floating diffusion region.” Claim 25 is drawn to a method for operating an image sensor comprising “receiving, at a first storage node of a pixel cell, charge generated by a photosensitive element of said pixel cell during an integration period; receiving, at a second storage node of said pixel cell, a portion of said charge generated by said photosensitive element during the integration period not stored at said first storage node; and transferring said charge from at least one of said first and second storage nodes to a floating diffusion region of said pixel cell.” Applicant respectfully submits that the alleged Weale and Guidash ‘804 combination does not teach or suggest these limitations.

To the contrary, Weale discloses a pixel cell for a CMOS sensor in which the “control circuitry causes the pixel to transfer a first collected signal from the photo site to the first storage node during a first period, [and] to transfer a second collected signal from the photo site to the second storage node during a second period that follows the first period.” (Weale, Col. 1, Ln. 63-67). Weale therefore teaches storing charge from a first integration period on the first storage node and storing charge from a second integration period on a second storage node, but does not teach or suggest storing charge from the same integration period at two separate storage nodes. Indeed, Weale teaches that it is “advantageous ... to collect and store two or more frames worth of data and then subsequently read these frames out at a subsequent point in time.” Thus, Weale expressly

teaches away from a pixel cell comprising “a first storage node for storing charge generated at a photosensitive element during an integration period prior to storing said charge at a floating diffusion region of said pixel cell; and a second storage node for storing a portion of said charge generated by said photosensitive element during the integration period that is not stored by said first storage node and prior to storing said portion of said charge at said floating diffusion region,” as recited by claim 1.

The Office Action relies on Guidash ‘804 as teaching “transferring charges to a floating diffusion region.” (Office Action, page 3). However, Guidash ‘804 does not cure the deficiencies of Weale discussed above.

Since the Weale and Guidash ‘804 combination does not teach or suggest all of the limitations of claims 1 and 25, claims 1 and 25 are not obvious over the cited combination. Claims 11 and 33 contain limitations similar to those of claims 1 and 25, respectively, and are allowable at least for the same reasons. Claims 2, 4, 6, 9 and 10 depend from claim 1 and are allowable for at least the reasons mentioned above. Claims 12, 14, 16, 19, 20 and 21-23 depend from claim 11 and are allowable for at least the reasons mentioned above. Claims 27-32 depend from claim 25 and are allowable for at least the reasons mentioned above. Claim 34 depends from claim 33 and is allowable for at least the reasons mentioned above. Applicant respectfully requests that the rejection be withdrawn and the claims allowed.

Claims 3, 5, 7-8, 13, 15, 17-18 and 26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Weale in view of Guidash ‘804 and U.S. Patent No. 6,069,376 (“Merrill”). This rejection is respectfully traversed.

Claims 3, 5 and 7-8 depend from claim 1, claims 13, 15 and 17-18 depend from claim 11, and claim 26 depends from claim 25 and are patentable over the alleged Weale and Guidash ‘804 combination for at least the reasons mentioned above. Merrill, which has been cited as allegedly teaching a gated storage node, does not cure the above-noted deficiencies of the Weale and Guidash

‘804 combination. Accordingly, Applicant respectfully requests that the rejection be withdrawn and the claims allowed.

Claims 24 and 35 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Weale in view of U.S. Patent No. 6,160,281 (“Guidash ‘281”). This rejection is respectfully traversed.

Claim 24 recites limitations similar to those of claim 11 and is patentable over Weale for at least the same reasons. Claim 35 depends from claim 33 and is allowable over Weale along with claim 33. Guidash ‘281, which has been cited as allegedly teaching at least two pixels sharing a common floating diffusion region, does not cure the above-noted deficiencies of Weale. Applicant respectfully requests that the rejection be withdrawn and the claims allowed.

Claims 36-37, 39, 41, 44 and 45 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Weale in view of Guidash ‘804 and U.S. Patent Application No. 2003/0090575 (“Miymoto”). This rejection is respectfully traversed.

Claim 36 recites limitations similar to those of claim 1 and is patentable over the alleged Weale and Guidash ‘804 combination for at least the reasons set forth above. Miymoto, which has been cited as allegedly teaching the use of a processor, does not cure the deficiencies of the Weale and Guidash ‘804 combination discussed above. Claims 37, 39, 41, 44 and 45 depend from claim 36 and are patentable for at least the same reasons. Accordingly, Applicant respectfully requests that the rejection be withdrawn and the claims allowed.

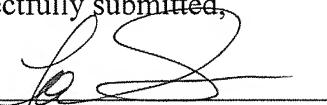
Claims 38, 40 and 42-43 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Weale in view of Guidash ‘804, Miymoto and Merrill. This rejection is respectfully traversed.

Claims 38, 40 and 42-43 depend from claim 36 and are patentable over the alleged Weale, Guidash ‘804, and Miymoto combination for at least the reasons set forth above. Merrill, which has been cited as allegedly teaching a gated storage node, does not cure the above-noted deficiencies of the Weale, Guidash ‘804, and Miymoto combination. Accordingly, Applicant respectfully requests that the rejection be withdrawn and the claims allowed.

In view of the above, Applicant believes the pending application is in condition for allowance.

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Respectfully submitted,

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